Mixed C&D Processors:

A Model for Local Government Recycling and Waste Reduction

Overview

During the past decade, a new generation of recyclers has developed throughout the state of California. Hundreds of businesses reuse, recycle, and compost materials source-separated from construction and demolition (C&D) projects. A significant new development, however, is the availability of mixed C&D processors.

Mixed C&D processors accept C&D materials in a mixed form and process them for recovery. Processors use a variety of hand labor, specialized materials handling equipment, and mechanized sorting systems to accomplish this heavy task.

Communities that have a mixed C&D processor within an economical haul distance can now be comfortable in requiring that most C&D debris generated in their communities be processed for maximum recovery prior to landfilling. If mixed C&D processing facilities are not available, communities could work to develop them or issue a request for proposals for the service of mixed C&D processing.

This study highlights the services that are now available in some communities and how local governments can use these services to help meet the requirements of the Integrated Waste Management Act of 1989 (AB 939, Sher, Chapter 1095, Statutes of 1989 as amended [IWMA]).

Program Characteristics

There are hundreds of independent companies that are currently able to provide reuse, recycling, and composting services for materials recovered from construction and demolition projects. The California Integrated Waste Management Board (CIWMB) has a list of many of these facilities posted on their Web site at www.ciwmb.ca.gov/ConDemo/Recyclers/. Approximately 400 C&D recyclers are listed on this Web site, which users can search by county and by types of materials. The types of materials listed are general, appliances, asphalt, brick, concrete, drywall, flooring, glass, metal, paint, plastic, wood, other, and all types.

Many communities have also prepared C&D recycling guides to provide to residents, contractors, and developers when they are seeking construction or demolition permits from the community. Some good examples of these guides are the Los Angeles and Alameda County C&D recycling guides (see References contact list).

As an indication of the scope and diversity of C&D recyclers, Alameda County includes information on reuse, recycling, or composting the following C&D materials:

- Asphalt
- Bricks (broken)
- Ceramic tiles
- Cinder blocks
- Clay roofing tiles
- Concrete (clean)
- Concrete roofing tiles
- Concrete w/rebar
- Dirt-clean fill
- Dirt w/ gravel and rock
- Dismantling
- Deconstruction
- Drywall/Gypsum
- Garage doors
- Lava rock
- Plumbing supplies
- Plywood (scrap)
- Rock/Gravel (clean)
- Roof shingles (wood)
- Sheetrock
- Sinks—porcelain (broken)

- Tile/Masonry
- Toilets (broken)
- Window screens
- Wood (treated or painted)
- Wood pallets (broken)
- Wood scraps (untreated)

In the City of Los Angeles, the Bureau of Sanitation, Solid Resources Citywide Recycling Division (SRCRD) provides the following guides to recycle C&D materials:

- "Construction & Demolition Waste Recycling Guide"
- "Wood You Recycle?"

These free guides provide recycling tips and a list of recycling companies for the various materials. Information can also be obtained online from www.cityofla.org/SAN/services/cdrecycl.htm. The City of Los Angeles generously offers its guide to other communities to reprint or use as the basis for developing their own local guides.

Local government public works, building department, and/or planning staffs are in a position to help educate residents, contractors, and developers about service options through the distribution of such guides and literature at their permit counters and service desks.

Mixed C&D Processors and Haulers

The new C&D recycling facilities in California are able to reuse, recycle, and/or compost materials from mixed loads of C&D debris. These service providers vary in their recycling processes, capacity, diversion rates, reporting systems, specifications, and collection services. However, they all offer the opportunity for local governments to consider a range of new policies and programs that could result in much greater recycling of C&D debris than in the past (see companion model study, "C&D Plans and Policies, " CIWMB Publication #310-01-014).

In some communities, it may be feasible now to require all C&D debris be processed before being landfilled. This requirement could apply to a franchised hauler only (as in Hawthorne, Calif.), or it could be associated with a landfill ban or source-separation requirement.

In a comprehensive C&D plan adopted October 1, 1999, in Hawthorne, the city required their franchise hauler to reuse, recycle, or compost all C&D materials to the maximum extent possible. No greater than 10 percent of C&D materials collected under the exclusive franchise is allowed to be taken directly to a landfill by the franchised hauler for disposal or use as alternative daily cover in a landfill. Instead, to the fullest extent possible, all C&D materials collected under the exclusive franchise are required to be processed to recover all reusable, recyclable, and compostable materials.

The Hawthorne C&D plan stipulated, "In no event should less than 90% of C&D materials be taken to a facility for preprocessing for reuse, recycling or composting. Processing residue may be used as ADC [alternative daily cover], and as a last resort, landfilled." In addition, the Hawthorne C&D plan set a short-term goal of achieving 50 percent diversion for all C&D materials for the franchised hauler.

All this was possible because Hawthorne determined that it would be cost-effective for their franchised hauler to take 90 percent of their C&D debris to either source-separated or mixed C&D processors when compared to other transfer station or landfill options. This was only possible because of the availability of mixed C&D processors in the area.

Known processors of mixed C&D materials in California are:

Bradley Landfill and Recycling Center, Sun Valley (see page 5).

Community Recycling and Resource Recovery Transfer Station, Sun Valley (see page 5).

Looney Bins, Sun Valley (see page 6).

Zanker Road Landfill, San Jose (see page 6).

Monterey Regional Waste Management District, Marina. Materials recovered: concrete and asphalt ground periodically for road base; wood ground for soil amendments; metal trucked off-site for sale; new sheetrock—ground for use with compost; cardboard—sold to local franchised hauler; inert fine material used for daily cover at landfill.

Equipment used: wood grinder; concrete and asphalt crusher (brought in when the pile reaches 50,000 tons to make crushed miscellaneous base [CMB]); screen for fines.

C&D recovery rate: 60 percent for C&D that goes to the materials recovery facility (MRF), of which 40 percent is fine material for landfill use. The MRF is adjacent to the landfill, and it processes 300 tons per day.

Sunnyvale Materials Recovery and Transfer Station. Materials recovered/end use: unpainted wood—ground for soil amendments; concrete and asphalt—sent to Raisch Products for grinding into CMB; metals—loosely placed into rolloff bins for sale; cardboard—loosely placed into rolloffs for baling and sale off site; experimenting with sheetrock processing and uses.

Equipment used: chipper for wood and yard waste.

Processing methods: floor sorting; forklifts; front-end loaders.

C&D recovery rate: 55 percent in 1999; receives 80 tons per day of C&D material; recovery of C&D constitutes about 20 percent of all materials (including municipal) received at site. Raisch Products has a grinding facility adjacent to the site that takes care of all concrete and asphalt received.

Western Placer Waste Management Authority. Materials recovered/end use: unpainted and some painted wood–ground up for local co-generation plant; concrete and asphalt—sent to landfill for winter decking and haul roads; light metals baled and heavy metals placed loosely into rolloffs for sale off site.

Equipment used: front-end loaders.

Recovery methods: hand-sorting from floor and loaders pull materials from mixed C&D loads. Receives about 40 tons per day of C&D material.

Florin-Perkins Transfer Station, Sacramento. Materials recovered/end use: concrete ground into road base; drywall screened and sold for farming applications; wood—run through horizontal grinder and sold for mulch or co-generation.

Equipment used: concrete crusher; horizontal grinder; sorting line.

Processing method: recyclables pulled from mixed loads.

Atlas Disposal, Sacramento. Materials recovered: metal placed loosely into 40-cubic-yard bins or onto high sides for sale off site; wood ground on site with horizontal grinder for sale as soil amendment; cardboard loosely placed into bins for sale off site.

Equipment used: front-end loaders and excavators with grapplers.

Processing methods: hand labor pulls from mixed loads; excavator with grappler.

Recovery rate: 74 percent of C&D waste stream is recovered; facility only accepts C&D material.

L&D Landfill, Sacramento. Materials recovered/end use: Cardboard; green waste; scrap metal; wood; concrete and asphalt are used on site for winter decking.

Equipment used: front-end loader.

Processing methods: hand labor pulls from mixed loads. Materials are loaded into bins and shipped off site for processing.

C&D recovery rate: 20 percent.

NorCAL, Tunnel Avenue, San Francisco. Materials recovered/end use: wood, metal, corrugated cardboard, asphalt, concrete, brick, clean fill, and dirt.

Equipment used: shaker screen, incline conveyor.

Processing method: positive sorting via sort stations with rolloffs underneath.

C&D recovery rate: 80 percent recovery for the materials that go over the line. About 50 percent of loads go through the line. Some clean loads go straight to markets. Line does not have capacity for all C&D that could be sorted. Currently obtaining permits to run sort line for more hours to increase processing capacity.

Other mixed C&D processing facilities include:

- Davis Street Transfer Station, San Leandro.
- Santa Barbara County Transfer Station.
- Morberg Industries, Santa Barbara.
- Paramount Resource Recovery.
- Consolidated.

Mixed C&D processors provide an important alternative to disposing C&D debris in landfills.

The material can be processed and recycled even if the C&D debris is mixed together at the site and transported in mixed loads. Mixed C&D processors are interested in working with other cities to develop customized C&D recycling plans and subcontract with local haulers. Most of them offer negotiated rates for major accounts.

Analysis of Mixed C&D Services

The following is a summary of the range of services that are available for hauling and processing mixed loads of C&D materials based on the facilities noted above.

Hauling Services. Many of the companies highlighted above also provide hauling services for construction and demolition debris.

Mixed C&D loads are taken back to processing yards for sorting out recyclable materials. Materials sorted include wood, gypsum drywall, scrap metals, mixed C&D materials (for example, brick, wood, metal and/or concrete combinations) and salvageable items. One company estimates that about 50 percent of the loads it pulls are taken to its yard, and the recovery rate from those loads is about 60 percent. Two companies accept fully mixed loads of C&D materials at their sites, from both private haulers and from their own hauling operations.

In some cases, companies haul source-separated materials (for example, concrete, wood, or scrap metal) directly to recycling processors. Contractors are required to place separated loads in trucks or rolloff bins and keep them free of other materials so that they can be accepted at the recycling center.

Most of these companies are interested in subcontracting C&D recycling services with local haulers, where appropriate. Some stated that lower rates could be negotiated if a local hauler established a regular account with their company.

Processing. Most companies process fully mixed loads of C&D materials at their sites, using a combination of manual labor (sorting from the floor), front-end loaders or excavators with grapplers, and high-capacity mechanical processing systems. Each facility varies in terms of how much hand labor and equipment they use. In addition, facilities may have grinders or bring in crushers.

The companies take in loads from their own vehicles as well as accepting all types of source-separated and mixed C&D loads from other haulers for a per-ton tip fee.

Many of these facilities are easily accessible. The Sun Valley facilities are all directly off Interstate 5 in Los Angeles. Zanker is directly off Route 237 in the heart of Silicon Valley in San Jose.

Recycling Rates. Diversion rates vary by company, by use of manual or mechanical processes, by source-separated versus mixed debris processing, and by materials handled. Processing Zanker's source-separated materials such as concrete, asphalt, and wood may achieve as high as a 100 percent recycling rate because the facility only accepts clean materials.

Mixed debris processing can vary from 10 percent, when manual labor is used, to 95 percent, when high capacity equipment is used. Facilities vary on the degree to which they are able to provide auditable documentation of their recycling rates for loads processed, particularly for mixed debris processing. Estimated recycling rates from companies are difficult to use for substantiating IWMA diversion.

Comparative Costs at Mixed C&D Debris Centers. At facilities that accept mixed debris loads, tipping costs may be equal to or lower than landfills, depending on the load and the location. High-volume prices would assure a lower tipping fee at these centers. Tipping fees for clean source-separated loads are much lower for materials such as concrete, asphalt, wood, and green waste. For example, the disposal fee at the Bradley Landfill-recycling center is $34 per ton, but its recycling facility accepts clean wood loads for as low as $20 per ton.

Company End Products. One of the important features of both source-separated and mixed debris processors is that they produce recycled end products rather than merely landfilling materials. These products include recycled road base produced from crushed concrete and asphalt, soil amendments and compost material produced from recycled wood, and scrap metal. In addition, used building materials and architectural salvage create other important opportunities for reuse, particularly from dismantling and "decon-struction" projects. New markets are also

developing for gypsum drywall, used carpeting, and other C&D debris.

Clearly, C&D debris need no longer be landfilled or taken to transfer stations where mixed C&D debris processing facilities exist. In fact, around the nation, C&D recyclers are increasingly reporting 80 to 95 percent diversion rates from C&D processing facilities. In some areas of California, facilities are available for haulers to achieve those levels of diversion. Several facilities are working to expand their mixed C&D processing capabilities. This is due to the tremendous opportunities that recycling mixed C&D present in helping to meet IWMA diversion goals.

Examples of Mixed C&D Processors

Summaries of some of the mixed C&D processors are provided below.

Bradley Landfill and Recycling Center. Bradley Landfill and Recycling Center is a fully permitted Class III landfill in Sun Valley owned and operated by Waste Management, Inc. In addition to disposal operations for all non-hazardous solid waste, it has a new mixed C&D operation located in a separate area from its disposal area. Incoming trucks with recyclable materials have the option of driving up to the recycling areas with their materials, which results in cost savings to the hauler.

The Bradley center contains two recycling areas. The first is for clean wood and green materials (ground in a tub grinder for soil amendments), chipped wood for particle board, and biofuel. The other area is for "dirty" mixed loads of wood roofing materials with large amounts of contaminants and tarpaper. These materials are processed by a high-capacity horizontal grinder and used for daily cover or erosion control on slopes. Inert materials are also crushed for use as daily cover or infill for Bradley's inert disposal portion of the site (which has a mine reclamation plan for closure).

Bradley is planning to expand its mixed C&D programs in 2000 and, and the company sees this as a major opportunity for helping cities meet their diversion goals. Bradley asserts that it's cheaper to recycle C&D materials than to dispose of them and that all uses comply with IWMA requirements.

Bradley counts all materials processed at the recycling area site as recycled, including alternative daily cover (ADC), slope application, and inert fill.

Materials recycled include concrete, rock, asphalt, scrap wood, scrap metal, bricks, tree trimmings, yard trimmings, drywall, inert materials, roofing materials, clean soils, asphalt chunks and asphalt grindings, and concrete with limited rebar.

Community Recycling & Resource Recovery. Community Recycling began operations in 1974 as a permitted transfer station. The company has since expanded its Sun Valley operations to include a mixed waste processing facility, recycling facilities for source-separated commodities such as paper, wood, yard trimmings, and supermarket produce, a mixed construction and demolition processing facility, and a fully permitted compost facility in Lamont, Calif. Community Recycling also owns and operates farmland near its compost site in Lamont.

Community Recycling owns three recycling operations in Sun Valley, Calif. The Sun Valley location covers 14 acres. The total current amount of material processed, including all activities, is between 3,000 and 3,500 tons per day. Additional capacity is being developed.

One facility sorts materials from mixed construction and demolition debris using both manual and mechanical processing systems. It takes in loads from its own vehicles and it accepts all types of mixed C&D debris from other haulers for a per-ton tip fee.

Community Recycling began its mixed C&D processing operations in the wake of the Northridge Earthquake. The company set up recycling operations to process mixed earthquake debris and were able to achieve an average recovery rate of 84 percent diversion.

Since that impressive start, Community Recycling currently processes about 500 to 700 tons per day of C&D debris, and it has a capacity of about 1,000 tons per day. The facility has purchased a state-of-the-art European mechanical system that will be operating soon on the same property. This system will increase its capabilities to accept more than 2,000 tons per day. The new system will also

yield higher diversion rates and higher quality end products.

Tip fees for regular customers are comparable to area transfer stations. The facility can guarantee an average of 75 to 80 percent diversion—documented monthly through a computerized reporting system—from fully mixed C&D loads. In 1999 the average facilitywide diversion rate was 88 percent. Loads are weighed in at the gate, and the monthly reporting system has been accepted by both local and State agencies.

Community Recycling will accept transfer trailer loads as well as any size smaller vehicle or bin. The facility accepts loads on a 24-hour basis, 7 days a week, making it convenient for haulers battling the traffic in the Los Angeles region.

Community Recycling is also in the process of opening a new C&D facility on the Carson/Long Beach border. The company will transfer loads for processing at the Sun Valley location. Rate schedules will be competitive with current area disposal tipping fees for rolloff loads.

All loads delivered to Sun Valley and the new Carson/Long Beach facility are weighed in and a written diversion report provided monthly with invoices to customers upon request.

Community Recycling also serves the Los Angeles movie industry and related attractions. Studios with excellent source-separation programs use the company's services to further divert materials from mixed loads. Community recycling is currently providing services to Universal Studios, Warner Bros. Studios, and DreamWorks SKG Animation Studio in Glendale.

Community Recycling has recently collaborated on a pilot program to recycle municipal street sweepings in the City of Long Beach. That pilot program resulted in a diversion rate of 97 percent for all the street sweepings. The program is now being offered throughout the Los Angeles County area and now includes the cities of Carson, Santa Monica, and portions of Los Angeles and Glendale. A pilot program to recycle beach debris in Santa Monica is also being undertaken.

Community Recycling also recycles street sweepings, mixed public works debris, and bulky waste from special residential and alley and lot cleanups. Diversion rates average about 60 to 75 percent for mixed public works and bulky waste loads. These types of recycling activities are included in the company's C&D processing operations.

Materials separated from mixed C&D debris for recycling at this location include asphalt, cardboard, concrete, concrete and clay roofing tiles, brick, plaster, gypsum, wood, yard waste, metals, and dirt.

Looney Bins. Looney Bins is a hauling service in the Los Angeles area. It services movie studios and construction and demolition accounts, many of which are tenant improvements.

Looney Bins takes mixed loads to its yard in Sun Valley for sorting when the loads have enough recyclable materials. About 50 percent of the mixed loads are taken to the yard for recycling. Looney Bins estimates that the recovery rate of those loads is 60 percent. Most of the C&D loads from which materials are recovered are mixed loads.

Materials recovered at its site include asphalt, concrete, soils, ferrous and some non-ferrous metals, wire, wood, cardboard, and gypsum drywall. The company uses 10-, 20- and 40- cubic yard rolloffs to haul materials. Sometimes it subcontracts to a hauler for low-side semi-end dumps for inert materials such as concrete. Looney Bins weighs incoming bins and reports diversion rates to accounts or municipalities when required or requested.

Zanker Road Landfill. Zanker Road Resource Management Ltd., (ZRRML) is nationally recognized for its landfill, recycling, and composting facilities in San Jose. ZRRML owns and operates three major recycling and composting facilities in the San Jose area. Its primary facility, the Zanker Road Landfill (Zanker) has had a 90 percent overall diversion rate for the past three years. Zanker currently processes and markets yard waste and compost, wood waste, cardboard, gypsum, concrete, clean and mixed demolition debris, metals, and bulky items.

Zanker began its operations in 1985 as a Class III landfill and recycling facility. Over the years, it has developed into a major full-service resource management, composting, and recycling facility,

as well as a landfill. The Zanker facility currently receives up to 1,300 tons per day.

Zanker is now expanding its San Jose operations with another facility just for the recycling of construction and demolition debris and wood waste in San Jose. This Zanker Materials Recovery Facility (ZMRF) is the former Owens Corning Landfill, located near the original Zanker Road Landfill. ZMRF has been fully permitted to process up to 1,250 tons per day.

The operation at Zanker began with wood waste processing. This plant accepts clean wood loads and wood separated from mixed loads that is self-hauled by residents and businesses. The wood is ground, screened, then sold as biomass fuel, mulch, and soil amendments. The wood-processing operation will be moved to the ZMRF in the near future.

In 1988, Zanker began its mixed C&D recycling system. Most mixed C&D debris comes from construction and demolition contractors or is self-hauled by residents. Zanker uses a unique "float tank" and screening system designed specifically for these types of materials. Mixed C&D debris is crushed, screened, and fed into the "float tank," where heavy materials sink and wood floats. Wood is skimmed off the top and combined with other wood recycling operations. Concrete, asphalt, bricks, and mortar are recovered from the bottom of the tank and then separated and processed further into usable materials.

Currently a new C&D recycling facility is being constructed at the ZMRF. After completion of the new facility, the C&D recycling operation at Zanker will be discontinued and all C&D will be processed at the ZMRF.

Zanker also operates a concrete recycling operation. Clean concrete, reinforced concrete, asphalt, bricks, and porcelain—along with concrete materials recovered from the demolition operation—are processed in this recycling operation. Materials received are screened and crushed. A magnetic belt removes steel. Wood, plastics, loose metals, and trash are removed from these materials. The crushed aggregate is screened to 3/4-inch minus and sold as a Class II base rock.

Metals are collected from several areas at the Zanker facility, including the landfill face, the demolition debris recycling plant, and the concrete recycling plant. Bulky goods are also accepted in this area. White goods are checked for CFCs and oil. The items are then dismantled, with the recycled materials being brought to the proper area at Zanker for processing and transport to market.

Yard waste received at Zanker is screened and fully composted. The composting process is approximately 12 weeks; the finished materials are then screened to remove wood and rocks. The finished compost is uniform in size and sold directly to landscapers and contractors.

Additional materials recycled at Zanker and ZMRF are gypsum wallboard, asphalt roofing, wood shingle roofing, and Nylon 6 carpeting.

The material produced from the C&D processing is sold mostly to construction and paving contractors as Class II aggregate and engineered fill. Wood is sold as biomass fuel and soil amendments. Metals are separated and sold by categories, including tin, #2 unprepared steel, copper, brass, and aluminum.

Costs, Economics, and Benefits

Comparative Costs at Mixed C&D Debris Centers. There may be an additional cost in some cases to recycle mixed C&D at reuse, recycling, or composting facilities when compared to local landfilling options. However, if C&D costs are considered on a project basis, increased costs for mixed C&D processing may be offset through savings from the recycling of other C&D materials (for example, clean concrete and scrap metal).

High-volume prices would assure lower tipping fees. Tipping fees for clean source-separated loads are much lower for materials such as concrete, asphalt, wood, and green waste.

Communities could require their franchised haulers to use mixed C&D processing facilities, if they are available, and include whatever additional cost there may be as an "allowable cost" in the next rate review process.

From the descriptions of mixed C&D debris processing options, it is clear that C&D debris could be recycled at rates between 80 to 95 percent with the proper combination of facilities in an area. Facilities in some areas of the state are now available for haulers to achieve those levels of diversion. Some of these facilities are also

working to expand their mixed C&D processing capabilities.

In other areas, communities may be able to help local businesses develop local facilities. They could attract one of the existing mixed C&D recyclers highlighted in this model study to expand to their area. When communities consider the risk of $10,000 per day fines under the IWMA, it makes sense to maximize the amount of materials diverted from C&D.

Local Government Challenges and Opportunities

The availability of these new facilities is of great significance to local governments. Where these mixed C&D processing facilities exist, local governments can encourage or require the processing of all or portions of C&D materials. Different tools could be used to accomplish this goal, such as:

- Providing incentives of lower city fees, where the contractor preprocesses all C&D materials or meets targeted diversion goals.
- Providing technical assistance to residents, contractors, and developers on where to take C&D debris to reuse, recycle, or compost it (including providing guides on counters of permit-issuing departments).
- Adopting requirements to preprocess all C&D generated from city-sponsored construction and demolition projects.
- Adopting requirements that all C&D projects, public or private, process all C&D debris before any can be landfilled.
- Adopting requirements that a city's franchise hauler process all C&D debris that it collects before any can be landfilled.

Additional ideas for how local governments can influence the amount of C&D recovered in their communities are highlighted in a companion model study, "C&D Plans and Policies," in this series (see References).

If mixed C&D processing facilities are not available in a given area, communities could contact businesses involved with C&D debris and explore with them what incentives and support might be needed to help them develop new facilities in their area.

Alternatively, many of the companies listed in this model study are interested in expanding their activities. Communities could issue a request for proposals for the service of mixed C&D processing. An RFP would be particularly appropriate if a community had land available that could be used by a private contractor on a leased basis to provide these services in the area (either under contract to the community, or through independent third-party transactions).

An RFP could be enhanced if connected with a funding system (for example, a deposit system, as described in the C&D Recycling Plans and Policies model study) that provided some funding or incentives for mixed C&D processing in that community.

Disaster Debris Plans

The Northridge earthquake is a good example of how a local government disaster debris plan could be creatively used to foster the development of new recycling services.

During the 1994 Northridge earthquake, the City of Los Angeles made arrangements with a number of C&D processors to handle the debris generated from that earthquake. The city arranged with the Federal Emergency Management Agency (FEMA) to reimburse the city's C&D contractors for their processing of this debris. Literally millions of dollars were spent on the cleanup of that earthquake. Much of that money was invested in developing the mixed C&D recycling systems that are clustered around Sun Valley, California.

The CIWMB has a model disaster debris management plan available on its Web site. Communities could adopt disaster debris management plans that have made arrangements in the case of natural disasters (including floods, earthquakes, fires) to reuse, recycle, and/or compost the C&D debris from those events. In the planning process, communities could identify the facilities available, contact those facilities to make contingency plans for different types of disasters, and clear in advance those plans with FEMA and other regulatory agencies.

Then, when a disaster strikes, communities can maximize reuse, recycling, and composting and build new infrastructure in the community.

Tips for Replication

- Identify services available from local C&D haulers and processors. Use the CIWMB Web site to identify recyclers in your area. Contact other neighboring cities and counties to obtain directories and guides to C&D recycling. If there are no mixed C&D processors in your area, contact those listed in this model study to see if they can offer services in your area (see list of contacts below).
- Consider helping existing C&D recyclers in your area to expand their own capabilities to process mixed C&D. Consider commitments of tonnages from city projects or direct financial assistance (grants or loans) to encourage their investment.
- Incorporate mixed C&D processing into disaster debris planning for your area.

References

CIWMB Publications

Many CIWMB publications are available on the Board's Web site at: www.ciwmb.ca.gov/Publications/.

To order hard copy publications, call 1-800-CA-Waste (California only) or (916) 341-6306, or write:

California Integrated Waste Management Board
Public Affairs Office,
Publications Clearinghouse (MS-6)
1001 I Street
P.O. Box 4025 (mailing address)
Sacramento, CA 95812-4025

The CIWMB has published a series of fact sheets, case studies, and resource lists on construction and demolition recycling. Of particular interest on the topic of C&D recycling is publication #310-01-014, "C&D Recycling Plans and Policies: A Model for Local Government Recycling and Waste Reduction."

Contacts

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The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, Flex Your Power and visit www.consumerenergycenter.org/flex/index.html.

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